

The tadpole of *Atelognathus nitoi* (Leptodactylidae, Telmatobiinae)

Néstor G. BASSO * & Carmen A. UBEDA **

* Instituto de Limnología "Dr Raúl A. Ringuelet", Casilla de Correo 712, 1900 La Plata, Argentina

** Departamento de Zoología, Centro Regional Bariloche, Universidad Nacional del Comahue, Unidad Postal Universidad, 8400 Bariloche, Argentina

The tadpole of *Atelognathus nitoi* is described. Tadpoles of this isolated species, endemic to the Nahuel Huapi National Park (Argentinian Patagonia), show the basic characteristics of the described tadpoles in the genus: *A. patagonicus* and *A. reverberii*. Tadpoles of *A. nitoi* are more similar in their external features and proportions to the tadpoles of *A. patagonicus* but are easily distinguishable from both species by having a broadly rounded tip of the tail and a smaller lateral emargination of the oral disc. Further differences with *A. reverberii* are the smaller size, the more slender body and the smaller oral disc.

INTRODUCTION

The genus *Atelognathus* consists of seven endemic species with small ranges in Patagonia (southern South America). These species are mainly distributed around basaltic lagoons of the extra Andean highlands in the provinces of Neuquén (*A. patagonicus*, *A. praebasalticus*), Río Negro (*A. reverberii*, *A. solitarius*) and Chubut (*A. salai*) in Argentina, between 38°40' and 46°10'S, and in the Magellanic moorlands of Wellington Island (*A. grandisonae*) in southern Chile, at about 49°S (CEI, 1984). *Atelognathus nitoi* inhabits a different habitat near a small Andean lagoon surrounded by the deciduous temperate forest of *Nothofagus pumilio* in western region of Río Negro Province.

Only the tadpoles of *A. patagonicus* and *A. reverberii* have been described. These nongregarious, free-swimming tadpoles of shallow waters have a typical leptodactylid appearance. Tadpoles of *A. reverberii* are larger and stouter than are those of *A. patagonicus* (CEI, 1965, 1969)

While conducting field work in December 1995 and March 1996 at the type locality of *A. nitoi* (BARRIO, 1973), we collected tadpoles of this poorly known species. The description of these tadpoles is here provided.

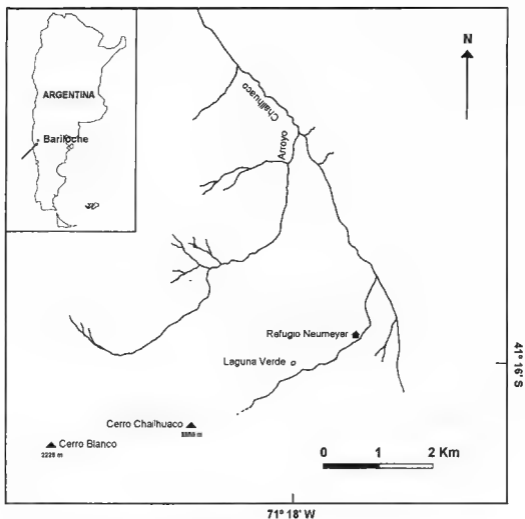


Fig. 1. - Location of Laguna Verde, type locality of *Atelognathus nitoi*, in the Parque Nacional Nahuel Huapi, Río Negro Province, Argentina. Triangle represents the peak of Cerro Chalhuaco and house symbol represents Neumeyer refuge.

MATERIAL AND METHODS

Tadpoles of *Atelognathus nitoi* were collected at the type locality: Laguna Verde, a small lagoon on Cerro Chalhuaco, Nahuel Huapi National Park, Río Negro Province, Argentina (41°16'S, 71°18' W, ca. 1550 m of elevation), the only known locality of the species (fig. 1). Geographic coordinates were obtained with a Garmin 45 Global Positioning System (GPS).

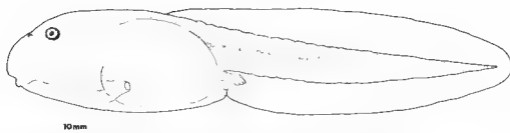


Fig. 2. Lateral view of a tadpole of *Atelognathus nitoi* (MACN 36695, stage 34)

Tadpoles deposited at Museo de La Plata (MLP A.1223) were collected on 10 December 1995 at developmental stages 25-28 (GOSNER, 1960). Some tadpoles were raised in the laboratory and fixed at various stages of development. Three tadpoles were allowed to complete metamorphosis in order to verify their specific identification. A tadpole deposited at Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN 36695) was collected on 2 March 1996 at stage 34. All tadpoles were fixed in 10% neutral formalin. Measurements were taken with a dial caliper to the nearest 0.05 mm. Drawings were made with a camera lucida attached to a Wild M-5 stereoscopic microscope. Terminology follows ALTIG (1970), ALTIG & JOHNSTON (1989), DUBOIS (1995) and VAN DIJK (1966).

Specimens examined for comparisons included *A. patagonicus* (MLP A.1222; 3 specimens) and *A. reverberii* (MACN 28467-68; 2 specimens).

DESCRIPTION OF TADPOLES OF *ATELOGNATHUS NITOI*

(fig. 2-3)

Type IV tadpoles (ORTON, 1953). Total length of largest specimen of the series (stage 40), 56.45 mm; smallest tadpole (stage 25), 15.1 mm (tab. 1). Total length at stage 34 (MACN 36695), 47.35 mm; body length about two-fifths of total length, almost twice body width; body shape oval, somewhat depressed, 1.2 times wider than high; snout rounded in dorsal and lateral profile; eyes large, dorsolateral; interorbital distance twice eye diameter; nostrils dorsal, protuberant, closer to eye than snout; distance between nostrils equal to their distance from eyes and three-fifths of interorbital distance; spiracle sinistral, opening directed posterolaterally; vent tube short; vent opening dextral, lying dorsal to a fold in ventral fin; caudal musculature moderately robust anteriorly, becoming narrower gradually toward tip of tail; dorsal and ventral fins equally developed, higher than musculature at midlength; dorsal fin extending slightly onto body; tip of tail rounded.

Oral disc anteroventral, slightly wider than interorbital distance, about 40% of body width; one row of small regular marginal papillae, with wide medial gap on upper labium (fig. 3); disc emarginate, lateral margin with small, but distinct constrictions; intramarginal lateral papillae present in infra- and supraangular regions; tooth row formula $2[A_2]/3[P_1]$; upper rows as long as upper sheath; third lower row slightly shorter than second lower row; jaw sheaths thin, gently curved and finely serrate.

Tab. 1. - Measurements (mm, mean \pm standard deviation) of tadpoles of *Atelognathus ntoi*. Those marked with an asterisk (*) were raised in the laboratory from tadpoles collected at stages 25-28. *n*: sample size

Stage	<i>n</i>	Body length	Total length
25	5	7.28 \pm 0.54	15.76 \pm 1.20
26	12	8.22 \pm 0.48	17.74 \pm 0.91
27	11	9.64 \pm 0.40	20.54 \pm 0.86
28	4	10.54 \pm 0.50	22.76 \pm 2.68
31*	1	14.05	39.50
34	1	21.75	47.35
35*	5	17.62 \pm 1.08	42.99 \pm 1.29
36*	2	21.42 \pm 0.25	51.32 \pm 2.37
38*	1	22.25	54.65
40*	3	22.63 \pm 0.47	54.62 \pm 2.33

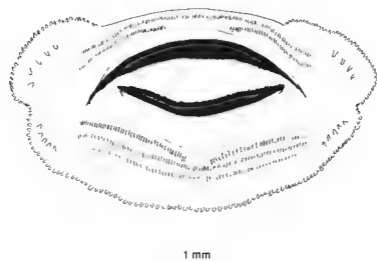


Fig 3. Oral disc of a tadpole of *Atelognathus ntoi* (MACN 36695, stage 34).

In life, dorsal color pattern of body golden-brown with bilateral unpigmented areas posterior to gills, giving the appearance of an indentation between head and body, caudal musculature golden-brown, caudal fins transparent with dark markings. In ventral view, intestine, heart, and cranial structures visible. In preserved specimens, densely crowded melanophores on the posterior body mark courses of blood vessels in tail musculature and fins.

DISCUSSION AND CONCLUSIONS

Tadpoles raised in the laboratory were maintained on a diet of Tetra Phill fish food. The tadpoles collected on 10 December 1995 and raised through metamorphosis in the laboratory reached stage 46 between 18 February and 11 March 1996.

The tadpoles collected at stages 25-28 were found at the littoral zone of the lagoon where they spent a considerable amount of time on the bottom in the shallow water. When disturbed, they swam individually about 1 m to a different location. The tadpole at stage 34 was found buried in the fine sediment on the bottom of the lagoon in 3 m of water. One adult female was found under a rotten tree-trunk near the pond margin on 10 December 1995.

The tadpoles of *A. nitoi* show the basic diagnostic characters listed by LAVILLA (1988) for the genus *Atelognathus* and can be classified in the ecomorphological guild Benthic (Section II.12) of ALTIG & JOHNSTON (1989).

Of the known tadpoles of the frog genus *Atelognathus*, tadpole of *A. nitoi* is most similar to that of *A. patagonicus* (CEI, 1965) from Laguna Blanca (Neuquén Province) than to that of *A. reverberii* (CEI, 1969) from Somuncurá Plateau (Río Negro Province). The tadpole of *A. nitoi* may be easily distinguished from *A. patagonicus* and *A. reverberii* by the broadly rounded tip of the tail and the smaller emargination of the oral disc. It differs further from the tadpole of *A. reverberii* by being smaller (*A. reverberii* grows to 98 mm total length; CEI, 1969), by having a slender oval body (*A. reverberii* has a stout and depressed body), and by having a smaller oral disc.

RESUMEN

Se describe la larva de *Atelognathus nitoi* en base a especímenes colectados en la localidad tipo de la especie. Laguna Verde, Cerro Challhuaco, Parque Nacional Nahuel Huapi, Provincia de Río Negro, Argentina. Las larvas de *A. nitoi* presentan las características típicas descritas para el género. De las dos especies cuyos renacuajos se conocen, *A. nitoi* presenta larvas con una morfología mas similar a la larva de *A. patagonicus* que a la de *A. reverberii*. Las principales características externas diferenciales con *A. patagonicus* y *A. reverberii* son el extremo caudal notablemente redondeado y las emarginaciones laterales del disco oral menos pronunciadas. De *A. reverberii* se diferencia, además, por el menor tamaño general, el cuerpo menos deprimido y el disco oral relativamente mas chico.

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